

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
11 August 2005 (11.08.2005)

PCT

(10) International Publication Number
WO 2005/073691 A1

(51) International Patent Classification⁷: **G01N 1/28**,
27/447, C12Q 1/68

(21) International Application Number:
PCT/GB2005/000308

(22) International Filing Date: 28 January 2005 (28.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0401868.5 28 January 2004 (28.01.2004) GB

(71) Applicant (for all designated States except US):
NORCHIP [NO/NO]; Industriveien 8, N-3490
Klokkarstua (NO).

(71) Applicant and

(72) Inventor (for MG only): **SETNA, Rohan, Piloo** [GB/GB];
Boulton Wade Tennant, Verulam Gardens, 70 Gray's Inn
Road, London WC1X 8BT (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SCHONFELD**,
Friedhelm [DE/DE]; Institut für Mikrotechnik Mainz

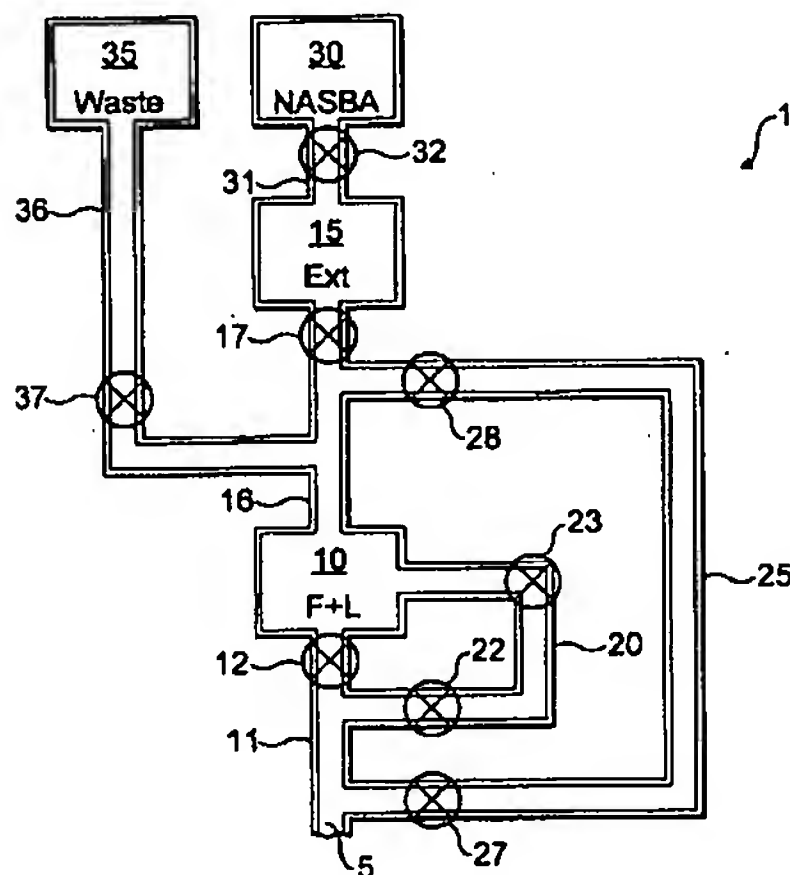
GmbH, Carl-Zeiss-Strasse 18-20, 55129 Mainz (DE). **VON
GERMAR, Frithjof** [DE/DE]; Institut für Mikrotechnik
Mainz GmbH, Carl-Zeiss-Strasse 18-20, 55129 Mainz
(DE). **KARLSEN, Frank** [NO/NO]; Industriveien 8,
N-3490 Klokkarstua (NO). **LICHTENBERG, Jan**
[CH/CH]; Institute of Microtechnology, University of
Neuchâtel, Rue Jacquet-Droz 1, CH-2000 Neuchâtel (CH).
VERPOORTE, Sabeth [CH/CH]; Institute of Microtech-
nology, University of Neuchâtel, Rue Jacquet-Droz 1,
CH-2000 Neuchâtel (CH).

(74) Agents: **SETNA, Rohan, Piloo** et al.; Boulton Wade
Tennant, Verulam Gardens, 70 Gray's Inn Road, London
WC1X 8BT (GB).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

[Continued on next page]

(54) Title: A DIAGNOSTIC SYSTEM FOR CARRYING OUT A NUCLEIC ACID SEQUENCE AMPLIFICATION AND DE-
TECTION PROCESS



(57) Abstract: An integrated lab-on-a-chip diagnostic system for carrying out a sample preparation process on a fluid sample containing cells and/or particles, the system comprising: (a) an inlet for a fluid sample; (b) a lysis unit for lysis of cells and/or particles contained in the fluid sample; (c) a nucleic acid extraction unit for extraction of nucleic acids from the cells and/or particles contained in the fluid sample; (d) a reservoir containing a lysis fluid; (e) a reservoir containing an eluent for removing nucleic acids collected in the nucleic acid extraction unit; wherein the sample inlet is in fluid communication with the lysis unit, an optional valve being present to control the flow of fluid therebetween; wherein the lysis unit is in fluid communication with the nucleic acid extraction unit, an optional valve being present to control the flow of fluid therebetween; wherein the reservoir containing the lysis fluid is in fluid communication with the lysis unit, an optional valve being present to control the flow of fluid therebetween; and wherein the reservoir containing the eluent is in fluid communication with the nucleic acid extraction unit, an optional valve being present to control the flow of fluid therebetween.

WO 2005/073691 A1



(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

Published:

— with international search report